

**DEFENSE INFORMATION INFRASTRUCTURE (DII)  
COMMON OPERATING ENVIRONMENT  
(COE)**

**OFFICE AUTOMATION**

**SOFTWARE REQUIREMENTS SPECIFICATION  
(SRS)**

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## **SECTION 1**

### **SCOPE**

#### **1.1 IDENTIFICATION**

This Software Requirement Specification (SRS) describes the Office Automation requirements for the Defense Information Infrastructure (DII). Dependencies and interactions between OA and OLS, and other functional areas of DII are discussed to help clarify where Office Automation begin and end and how these services fit into the overall DII Common Operating Environment (COE).

The Office Automation (OA) Computer SRS identifies standards for interoperability and data interchange for the OA software packages. Emphasis is placed on the identification of standard data protocols and data formats, leaving users to select compliant, Word Processing, Spreadsheet and Briefing Graphics packages that best meet their needs. The goal is to establish applications that communicate through standard Application Programming Interfaces (APIs). The office automation requirements contained within this document shall be used throughout the other DII functional areas to perform like functions.

Requirements in this document pertain to software developed for the DII, software developed by other programs which have been contributed to DII, and, where possible, to non-developmental software (Government-Off-The Shelf (GOTS) and Commercial-Off-The-Shelf (COTS)) which have been licensed for use within DII.

#### **1.2 DII COMMON OPERATING ENVIRONMENT**

The DII Common Operating Environment (COE) is intended for use by all Department of Defense (DOD) Command and Control Systems as the infrastructure on which they reside. The COE consists of an integrated architecture made up of hardware and software which provides standard, modular system support and application support software for a tailorable set of functional application software.

##### **1.2.1 Office Automation**

Office Automation is part of the DII COE. OA identifies standards for the DII OA software packages. The OA software packages will provide general automated productivity-enhancing applications. The office automation functional capabilities include: word processing, email, presentation graphics, spreadsheet, drawing, illustration, on-line support and other productivity-enhancing functions identified as necessary within the DII COE.

Word Processor applications support the writing, revising, manipulation, formatting, and printing of electronic documents, printed papers, printed reports, and other printed matter. Word Processor applications also support limited functions for document formatting, e.g., changes of font, line spacing, incorporation of graphics created with another application, or page layout.

Electronic Mail applications support the creation, sending, receiving, viewing, storing, and forwarding of digital information. The information may be text, video, sound, imagery, graphics, animation, multimedia or hypermedia. Capabilities such as forward, carbon copies, return request receipts, electronic signature authentication, and the ability to attach files are supported. Electronic Mail applications let users specify parameters for what information to discard or retain and how it should be stored. Electronic Mail messages should not be confused with the Message Processing System "formatted messages"; however, the two systems should be interoperable at the protocol level and be capable of exchanging data, e.g., messages and message attachments.

Presentation Graphics applications support the planning, writing, revising, manipulation, formatting, and printing of briefings. The slides for a briefing are treated by Presentation Graphics applications as a single entity and not as a separate file for each image. Presentation Graphics applications include business graphics and tools for limited drawing and painting tasks. Images and graphics created by other office automation applications may be inserted into the Presentation Graphics images.

Spreadsheet applications support the processing of information that is arranged in rectangular arrays. Spreadsheet applications use rows and columns of cells. Each cell can hold text or numerical data, or a formula that uses values in another cell to calculate a result. Spreadsheet applications also support the graphical display (e.g., scatter grams, two and three dimensional graphs) of the data contained in the spreadsheet.

Drawing and Illustration applications support the creation and manipulation of object-oriented graphics (e.g., lines, curves, and other geometric shapes). A user of Drawing applications can manipulate an element such as a line, circle, or block of text as an independent object by selecting the object and moving it.

On-Line Support services provide the following functional capabilities: On-Line Help, On-Line Job Planning, On-Line Reference, and Computer-Based Instruction . These functions are intended to provide comprehensive help to users in every aspect of the system implementation.

### **1.3 DOCUMENT OVERVIEW**

This document specifies the requirements of office automation functional area and the methods used to ensure that each requirement has been met. OA is one of the functional areas of the DII COE.

Section 1 of this document identifies the office automation functional area and provides an overview of the capabilities.

A list of applicable government and non-government documents is found in Section 2.

Section 3 details the engineering functional capabilities for the office automation area including the internal and external interfaces, performance requirements, security requirements, the design constraints and the trace to the DII COE requirements.

Section 4 is the qualification requirements.

The requirements traceability matrix is located in Section 5 of this document.

Section 6 contains any applicable notes.

## **SECTION 2**

### **REFERENCED DOCUMENTS**

#### **2.1 GOVERNMENT DOCUMENTS**

1. Defense Information Infrastructure (DII) Common Operating Environment (COE) Functional Area System Requirements Specification for Message Processing, 11 July 1995, DISA
2. User Interface Specifications for the Defense Information Infrastructure (DII), Version 2.0, 31 December, 1995, DISA
3. Defense Information Infrastructure (DII) Common Operating Environment (COE) Baseline, Version 1.0, Preliminary Draft, February 14, 1996, DISA.
4. Defense Information Infrastructure (DII) Common Operating Environment (COE) Integration and Runtime Specification (I&RTS) , Version 2, October 23, 1995, DISA.
5. Defense Information Infrastructure (DII) Common Operating Environment COE Security Requirements Specification, Version 1.2, 1 December, 1995
6. DOD, MIL-STD-1781, May 1984, Simple Mail Transfer Protocol (SMTP), Washington, DC: DOD.
7. NIST, FIPS PUB 128-1, 11 May 1993, Computer Graphics Metafile (CGM),Springfield, VA: NTIS.
8. NIST, FIPS PUB 152, September 1988, Standard Generalized Markup Language(SGML), Springfield, VA: NTIS.

#### **2.2 NON-GOVERNMENT DOCUMENTS**

1. Adobe Systems Inc., 1990, PostScript Language Reference Manual, 2nd ed., Reading, MA: Addison-Wesley.
2. CCITT X.400-X.430, November 1988, Message Handling Systems, Vol. VIII-FascicleVIII.7-CCITT Recommendation, Switzerland: CCITT.
3. IEEE P1003.1, 1990, IEEE Standard Portable Operating System Interface for Computer Environments, Piscataway, NJ: IEEE.
4. ISO 8879, 1986, Information processing — Text and office systems— Standard Generalized Markup Language (SGML), Switzerland: ISO.
5. X/Open Single UNIX Specification, 1995, San Francisco, CA: X/Open Co.,Ltd.

6. X/Open Common Desktop Environment (CDE) Specification, 1995, , San Francisco, CA: X/Open Co., Ltd..
7. ECMA Application Programming Interface for Windows (APIW) Specification (Draft), 14 July, 1995, ECMA

## **SECTION 3**

### **REQUIREMENTS**

#### **3.1 REQUIRED STATES AND MODES**

The DII operates in the following modes:

- Operational Mode. This is the normal mode of operation where the DII is on-line supporting the operational mission.

- Maintenance Mode. In this mode, portions of the hardware or software at the DII site will be off-line for maintenance, modification, upgrade, or other related action.

- Training Mode. In this mode, a portion of the DII may be operated with separate databases using simulated inputs in support of training for a portion of the user population. Care must be taken to ensure that exercise data is not mixed with operational data.

- Exercise Mode. In this mode, a portion of the DII may be operated with separate databases using simulated inputs in support of an exercise for a portion of the user population.

Care must be taken to ensure that exercise data is not mixed with operational data. Normal day-to-day operations will probably find all three operating modes existing at the same time at different DII sites. The modes will be distinguished by administrative features or architectural boundaries. The Office Automation requirements are valid for all required states and modes.

#### **3.2 CAPABILITY REQUIREMENTS**

The office automation functional area currently contains five sub components: Word Processing, Electronic Mail, Presentation Graphics, Spreadsheet, and Drawing/Illustration. It is possible that a single package may support more than one sub component. The following sections set forth requirements for each of the five sub-components, however, global requirements, which all office automation products must adhere to, have been gathered into a global functional requirements section with specific functional requirements for each office automation package to follow.

### **3.2.1 Global Functional Requirements**

The following section contains global functional requirements for all office automation products in the DII COE.

3.2.1.1 The office automation software shall be capable of operating in a WYSIWYG mode.

3.2.1.2 The office automation software shall meet the guidelines set forth in the DII Style Guide. The DII COE Style Guide provides a common framework for human computer interface design and implementation, defining the long-term functional goals, objectives and requirements of the human computer interface.

3.2.1.3 The office automation software shall comply with the Inter-Client Communications Conventions Manual (ICCCM).

3.2.1.4 The office automation software shall comply with POSIX 1003.1.

3.2.1.5 The office automation software shall provide context-sensitive on-line help.

3.2.1.6 The office automation software shall allow the arbitrary placement of software on clients and/or servers without impact to the user.

3.2.1.7 The office automation software shall allow the administrator to specify path and directory information for software installation.

3.2.1.8 The office automation software shall not remap function keys, color maps, or any other shared resources in a way that prevents other applications from running correctly.

3.2.1.9 The office automation software shall support PostScript Level 2 page description language for printing and shall allow the user to generate PostScript Level 2 files.

3.2.1.10 The office automation software shall provide spell checking with the capability to add user-defined words.

### **3.2.2 Word Processing**

The following section contains functional requirements for word processing office automation products in the DII COE.

3.2.2.1 The Word Processing software shall support the import and export of documents in the following formats for exchange of legacy data. It is the intent to move to one standard format for document exchange, however, for migration purposes, multiple file formats must be supported.

- (a) ASCII Text
- (b) Word Perfect V6.0



- (c) Microsoft Word V2.0 and V6.0
- (d) Interchange Format (RTF)
- (e) Lotus WKS/WK1/WK3
- (f) Standard General Markup Language (SGML)
- (g) Hyper Text Markup Language (HTML)
- (h) Encapsulated PostScript (EPS)

3.2.2.2 The Word Processing software shall support the import of graphics in the following formats:

- (a) Computer Graphics Metafile (CGM)
- (b) Tagged Image File Format (TIFF) R and G
- (c) Encapsulated PostScript (EPS)
- (d) Graphics Interchange Format (GIF)
- (e) Portable Bitmap (PBM)
- (f) PC Paintbrush (PCX)

3.2.2.3 The Word Processing software shall provide for the import of text and graphic files to be incorporated in a document by reference or copied into the document.

3.2.2.4 The Word Processor software shall support the message generation requirements of DII Message Processing System text processing subsystem for generation of free text messages.

3.2.2.5 The Word Processing software shall support at least 158 columns per line, 250 lines per page, and 500 pages per document.

3.2.2.6 The Word Processing software shall allow the user to specify page length and page width and set page orientation (landscape or portrait).

3.2.2.7 The Word Processing software shall allow automatic numbering of chapters, sections, subsections, and paragraphs using a user-selected numbering system.

3.2.2.8 The Word Processing software shall allow automatic page numbering with options for all pages, a defined range of pages, and numbering to begin on any page.

3.2.2.9 The Word Processing software shall allow user-specified page numbering and several page numbering styles (e.g., roman, standard, appendix).

3.2.2.10 The Word Processing software shall provide for the automatic creation of a table of contents and index.

3.2.2.11 The Word Processing software shall allow the user to set columns (newspaper and parallel formats), set tabs, change fonts (typefaces), indent text, specify line spacing (single, double, etc.), set margins (left, right, top, and bottom), and insert page breaks.

3.2.2.12 The Word Processing software shall allow the user to create figure boxes, text boxes, table boxes, graphics boxes and horizontal and vertical line drawing.

3.2.2.13 The Word Processing software shall allow the user to use and change text justification (left, right, center, and full).

3.2.2.14 The Word Processing software shall provide on-screen text formatting with automatic text realignment.

3.2.2.15 The Word Processing software shall allow the user to indent blocks of text from both the left and right margins without changing the document margins.

3.2.2.16 The Word Processing software shall provide automatic carriage return and cursor wraparound for both column and full width modes.

3.2.2.17 The Word Processing software shall allow the user to override page break placement.

3.2.2.18 The Word Processing software shall allow the user to mark a block of text to move, copy, repeat copy without remarking, or delete.

3.2.2.19 The Word Processing software shall allow the user to mark a block of text (in order to narrow the scope of text formatting, spell checking, and calculation functions) to affect only the area marked by block of text.

3.2.2.20 The Word Processing software shall allow the user to delete text by character, word, line, remainder of line, or user-defined block.

3.2.2.21 The Word Processing software shall allow the user to insert an imported document or data file at the location of the cursor.

3.2.2.22 The Word Processing software shall provide boldface and italics.

3.2.2.23 The Word Processing software shall provide subscripts and superscripts.

3.2.2.24 The Word Processing software shall allow the user to convert the case of selected text.

3.2.2.25 The Word Processing software shall allow the user to underline words only, and words and spaces as an unbroken line.

3.2.2.26 The Word Processing software shall allow the user to define, save, and reuse, in subsequent editing sessions, multiple page formats within a document (e.g., margins; tabs; ruler; page, paragraph, columns, headers, footers, page and line numbering; footnotes, end notes).

3.2.2.27 The Word Processing software shall allow multiple users to open multiple copies of the same or different documents concurrently.

3.2.2.28 The Word Processing software shall provide a ruler.

3.2.2.29 The Word Processing software shall provide a status line and menus.

3.2.2.30 The Word Processing software shall provide macro record and playback facilities to support repeated entry of keystroke combinations, including function keys.

3.2.2.31 The Word Processing software shall provide automatic timed backups to storage media at a user-defined interval.

3.2.2.32 The Word Processing software shall allow the user to undo at least the last change.

3.2.2.33 The Word Processing software shall allow the user to abort an editing session and revert to the original document while disregarding all changes made during the session.

3.2.2.34 The Word Processing software shall allow movement between two documents (including the same document in two separate windows) using up to a full screen display for each document for two or more concurrently active (open) documents.

3.2.2.35 The Word Processing software shall allow the user to perform all the capabilities outlined in this document for one active document should two or more documents be concurrently open.

3.2.2.36 The Word Processing software shall allow the user to move the cursor left, right, up, and down using keyboard arrow keys and shall allow the user to move the cursor directly to the first or last character in a line.

3.2.2.37 The Word Processing software shall allow cursor movement to the next screen of text which shall include the last one to four lines of text from the previous screen.

3.2.2.38 The Word Processing software shall allow cursor movement to the previous screen of text which shall include the first one to four lines of text from the following screen.

3.2.2.39 The Word Processing software shall allow the user to move the cursor directly to the previous or next page of text.

3.2.2.40 The Word Processing software shall allow the user to move the cursor directly to a user-selected page number.

3.2.2.41 The Word Processing software shall allow the user to move the cursor directly to the first character of the document (top) or to the end of the document.

3.2.2.42 The Word Processing software shall allow the user to move the cursor directly to the beginning or end of the screen.

3.2.2.43 The Word Processing software shall allow the user to scroll the text vertically one line at a time, up and down.

3.2.2.44 The Word Processing software shall allow the user to scroll the text horizontally, left and right, to a width of at least 158 characters.

3.2.2.45 The Word Processing software shall allow the user to perform search and search-and-replace functions within user-defined ranges, or globally throughout the document.

3.2.2.46 The Word Processing software shall permit search functions on occurrences of user-specified character strings (ASCII characters including carriage returns, control codes(e.g., bold, margin, tabs, etc.), and/or keyboard-generated characters).

3.2.2.47 The Word Processing software shall provide the capability for the automatic numbering and placement of footnotes and endnotes throughout the document with endnote consolidation at the end of document.

3.2.2.48 The Word Processing software shall allow the user to associate footnotes and endnotes with the appropriate text so reformatting, adding, or deleting text does not cause the note to be relocated.

3.2.2.49 The Word Processing software shall allow the user to:

- (a) place header and footer text at the top and bottom of each page of a document.
- (b) place a minimum off our lines of header/footer text at the top and bottom of each page of a document.
- (c) place header and footer text from a designated page of a document to the end of the document.
- (d) maintain headers and footers on all pages or alternating pages of a document until another header or footer is entered by the user.
- (e) alternate between header and footer formats for odd and even pages.
- (f) prevent changes to the body of a document from affecting the headers and footers and, conversely, prevent changes to headers and footers from affecting the body of a document.
- (g) automatically generate page numbers inside headers and footers.

3.2.2.50 The Word Processing software shall provide the capability for automatic alignment of vertical columns.

3.2.2.51 The Word Processing software shall allow the user to format text within columns without affecting column parameters.

3.2.2.52 The Word Processing software shall provide the capability for alignment of columns of decimal figures on the decimal point.

3.2.2.53 The Word Processing software shall allow the user to change the number of copies to be printed.

3.2.2.54 The Word Processing software shall allow the user to print all pages, selected pages, or marked pages of a document.

3.2.2.55 The Word Processing software shall permit the user to select manual or continuous paper feeding.

3.2.2.56 The Word Processing software shall allow the user to change between draft and letter quality print selection.

3.2.2.57 The Word Processing software shall allow the user to select between logical print devices.

3.2.2.58 The Word Processing software shall allow the user to select print job management (e.g., cancel, rush, display progress).

3.2.2.59 The Word Processing software shall provide support for both fixed and scaleable type fonts to include scaling of point size and characters per inch.

3.2.2.60 The Word Processing software shall provide a document print preview.

3.2.2.61 The Word Processing software shall provide an on-line thesaurus.

3.2.2.62 The Word Processing software shall provide document style guides or templates.

3.2.2.63 The Word Processing software shall provide an outliner.

3.2.2.64 The Word Processing software shall provide a label generation capability.

3.2.2.65 The Word Processing software shall allow the user to create, move, rename, and delete user-specified documents and document directories from a menu (i.e., file management).

3.2.2.66 The Word Processing software shall provide a document markup capability including redline and strikeout.

3.2.2.67 The Word Processing software shall provide hot keys for the more repetitive functions.

3.2.2.68 The Word Processing software shall provide widow and orphan line protection.

3.2.2.69 The Word Processing software shall provide automatic hyphenation at the end of a line.

3.2.2.70 The Word Processing software shall allow the user to incorporate mathematical/scientific symbols and foreign character sets (e.g., Greek, Hebrew, Cyrillic, German, French, Russian).

3.2.2.71 The Word Processing software shall allow sorting selected text within a table by paragraph and line.

3.2.2.72 The Word Processing software shall allow the user to reposition and scale graphics once they are in the document.

### **3.2.3 Electronic Mail**

The following section contains functional requirements for electronic mail office automation products in the DII COE.

3.2.3.1 The Electronic Mail software shall comply with the following standards:

- (a) Simple Mail Transport Protocol (SMTP)
- (b) International Consultative Committee on Telegraphy and Telephone (CCITT) X.400 (or written migration plan to CCITT X.400)
- (c) Multipurpose Internet Mail Extensions (MIME)-RFC 1341

3.2.3.2 The Electronic Mail software shall be compatible with and interoperate with the DII Message Processing System for message distribution and introduction of messages to be released.

3.2.3.3 The Electronic Mail software shall provide the capability to create, send, answer and route messages.

3.2.3.4 The Electronic Mail software shall provide the capability to save a message in a defined storage location for later retrieval.

3.2.3.5 The Electronic Mail software shall provide the capability to save an in-progress message for later editing and sending.

3.2.3.6 The Electronic Mail software shall have folder-oriented file system access available within the application software.

3.2.3.7 The Electronic Mail software shall provide the following fields in each mail message: addressees, copy recipients, subject, message body, originator, time sent, date sent.

3.2.3.8 The Electronic Mail software shall be able to attach multiple text and binary enclosures to mail messages.

3.2.3.9 The Electronic Mail software shall be able to import ASCII text into the body of a message.

3.2.3.10 The Electronic Mail software shall provide the option for the sender to obtain a receipt when a message is delivered to or viewed by each recipient.

3.2.3.11 The Electronic Mail software shall provide the capability to create, add, delete, and modify private distribution lists.

3.2.3.12 The Electronic Mail software shall be able to announce mail deliveries while the user is active in another application.

3.2.3.13 The Electronic Mail software shall provide group accounts so more than one user can access the account simultaneously.

3.2.3.14 The Electronic Mail software shall provide the capability to access both personal and group accounts from a single user ID.

3.2.3.15 The Electronic Mail software shall allow the user to print a message.

3.2.3.16 The Electronic Mail software shall provide a message in-box window with the following information: originator, subject, date sent, and time sent.

3.2.3.17 The Electronic Mail software shall provide the ability to save enclosures with mail files.

3.2.3.18 The Electronic Mail software shall provide the capability to detach and store enclosures as separate files.

3.2.3.19 The Electronic Mail software shall be able to store mail on centralized mail servers.

3.2.3.20 The Electronic Mail software shall provide the capability for a user to save messages and enclosures external to the mail system.

3.2.3.21 The Electronic Mail software shall provide the capability to create and maintain a centralized list of mail addressees to include addressees from external mail domains(global list).

3.2.3.22 The Electronic Mail software shall provide a search feature for the global list based on a username.

3.2.3.23 The Electronic Mail software shall provide an API (Application Programming Interface) with editing and debugging support.

3.2.3.24 The Electronic Mail software shall provide the capability for users to forward their mail-boxes to another account.

3.2.3.25 The Electronic Mail software shall provide a user-definable notification to a sender that the user is unavailable to review mail.

3.2.3.26 The Electronic Mail software shall provide the user with an option to save a message to a mail folder when it is sent.

3.2.3.27 The Electronic Mail software shall provide the capability to sort and search mail folders for the priority of message, sender name, subject, viewed status (new, unread, read, deleted), and date.

3.2.3.28 The Electronic Mail software shall be able to facilitate viewing enclosures by starting the appropriate application (e.g., word processor, spreadsheet).

3.2.3.29 The Electronic Mail software shall provide the capability to have aliases for users.

3.2.3.30 The Electronic Mail software shall be able to support a macro language within the application.

3.2.3.31 The Electronic Mail software shall provide the system administrator with the capability to suspend the ability of a user to send messages.

3.2.3.32 The Electronic Mail software shall be able to support the coordination of memos and documents.

3.2.3.33 The Electronic Mail software shall allow the user to prepare a document for editing and release by another person.

3.2.3.34 The Electronic Mail software shall provide the capability to archive and retrieve all messages sent.

3.2.3.35 The Electronic Mail software shall provide the capability to support the following profile-based electronic mail requirements. A profile defines a set of system functions or capabilities which are needed by the user to perform his/her functional activity, e.g., Watch Officer. A user may possess one or more profiles and may have one or more of these profiles active during the user's login session. The profile may require that the user assuming that profile be able to create, send, receive and reply to electronic mail addressed to that profile.

3.2.3.35.1 The Electronic Mail software shall provide the capability when creating an E-mail message to select the originator's address to be one of the user's active profile(s).



3.2.3.35.2 The Electronic Mail software shall provide the capability to address E-mail messages to a profile.

3.2.3.35.3 The Electronic Mail software shall provide the capability to route E-mail messages to a profile

3.2.3.35.4 The Electronic Mail software shall provide a search feature for the global list based on a profile name.

3.2.3.35.5 The Electronic Mail software shall provide the capability when replying to a profile-based E-mail message to have the default return address be the profile for which the message was received.

3.2.3.35.6 The Electronic Mail software shall provide the capability to read profile-based E-mail messages received by users active in that profile.

3.2.3.35.7 The Electronic Mail software shall provide the capability to notify a user upon receipt of a profile-based E-mail messages by users active in that profile.

3.2.3.36 The Electronic Mail software shall provide the capability to send E-mail to multiple addresses to include users, mail lists, mail aliases and profiles.

3.2.3.37 The Electronic Mail software shall provide the capability to route E-mail to multiple addresses to include users, mail lists, mail aliases and profiles.

3.2.3.38 The Electronic Mail software shall provide the capability to address E-mail messages to any mail address to include an address not available in the global directory .

3.2.3.39 The Electronic Mail software shall provide the capability to route E-mail messages to any mail address to include an address not available in global directory.

### **3.2.4 Presentation Graphics**

The following section contains functional requirements for presentation graphics office automation products in the DII COE.

3.2.4.1 The Presentation Graphics software shall support the import and export of the following file formats:

- (a) Computer Graphics Metafile (CGM)
- (b) Tagged Image File Format (TIFF) R and G
- (c) Encapsulated PostScript (EPS)

- (d) Graphics Interchange Format (GIF)
- (e) Portable Bitmap (PBM)
- (f) PC Paintbrush (PCX)
- (g) ASCII Text

3.2.4.2 The Presentation Graphics software shall support the import of the following file formats:

- (a) FrameMaker Interchange Format (MIF)
- (b) Microsoft Paint (MSP)
- (c) Lotus (PIC)
- (d) MacPaint (PNTG)
- (e) PowerPoint V3 and V4
- (f) WordPerfect Graphics (WPG)
- (g) Sun Raster
- (h) X-Window Dump (XWD)
- (i) X-Window bitmap (XBitmap)
- (j) Lotus WKS/WK1/WK3 spreadsheets

3.2.4.3 The Presentation Graphics software shall provide symbols for flow charts and maps and a common clip art library.

3.2.4.4 The Presentation Graphics software shall be able to resize, rescale, flip, or rotate objects from the object libraries.

3.2.4.5 The Presentation Graphics software shall provide the capability for on-line color changes to any on-screen object.

3.2.4.6 The Presentation Graphics software shall allow the user to position more than one graphic image on one screen.

3.2.4.7 The Presentation Graphics software shall provide the capability to generate

- (a) pie charts and exploded pie charts in both 2D and 3D directly from data without a human drawing effort
- (b) horizontal, vertical, and stacked vertical bar graphs in both 2D and 3D directly from data without a drawing effort.

- (c) vertical and horizontal line graphs in both 2D and 3D directly from data without a drawing effort.
- (d) scatter plot diagrams in both 2D and 3D directly from data without a drawing effort.

3.2.4.8 The Presentation Graphics software shall provide at least

- (a) seven distinct colors
- (b) seven distinct line patterns
- (c) seven distinct shading patterns

3.2.4.9 The Presentation Graphics software shall provide definable color vectors.

3.2.4.10 The Presentation Graphics software shall provide independent and grouped scaling of objects.

3.2.4.11 The Presentation Graphics software shall provide the capability to display, snap to and print a graph grid.

3.2.4.12 The Presentation Graphics software shall provide rulers.

3.2.4.13 The Presentation Graphics software shall provide user-selectable scales in inches, centimeters, and points for grids and rulers.

3.2.4.14 The Presentation Graphics software shall allow the user to label the x-axis and y-axis with user-provided horizontal and vertical labels.

3.2.4.15 The Presentation Graphics software shall permit display and editing in portrait and landscape modes.

3.2.4.16 The Presentation Graphics software shall provide for flipping and rotation of the x- and y-axis of the display chart or graph.

3.2.4.17 The Presentation Graphics software shall allow the user to enter at least three header lines of 40 characters each and three footer lines of 40 characters each.

3.2.4.18 The Presentation Graphics software shall allow automatic page numbering to appear separately from the footer on each graphic image.

3.2.4.19 The Presentation Graphics software shall allow the user to select for each header line and footer line the character size, color, typeface, and justification.

3.2.4.20 The Presentation Graphics software shall provide the capability for the user to select size and type of scale (linear and logarithmic) and points for grids and rulers.

3.2.4.21 The Presentation Graphics software shall be able to edit, move, copy, delete, and undelete objects on screen.

3.2.4.22 The Presentation Graphics software shall provide the capability for the user to store, edit, delete, and retrieve images and their parameters and settings.

3.2.4.23 The Presentation Graphics software shall provide the capability to print and plot graphs in portrait and landscape modes.

3.2.4.24 The Presentation Graphics software shall be able to plot to an HPGL4 plotter or plotter that emulates HPGL4.

3.2.4.25 The Presentation Graphics software shall permit a print preview of the entire page of graphics images on screen.

3.2.4.26 The Presentation Graphics software shall allow the user to select page length and width, the of number of copies to print, draft- or high-quality printing, color or black and white print output.

3.2.4.27 The Presentation Graphics software shall allow the user to select and manage printers.

3.2.4.28 The Presentation Graphics software shall provide the capability to present the same data in different chart formats without rekeying the data.

3.2.4.29 The Presentation Graphics software shall provide the capability to delete individual objects or object groups selectively without having to recreate the entire display.

3.2.4.30 The Presentation Graphics software shall provide slide show and slide manager capabilities.

3.2.4.31 The Presentation Graphics software shall provide the capability to add text and special characters in selectable typefaces in point sizes from 8 to 48 points.

3.2.4.32 The Presentation Graphics software shall draw lines (including freehand), rectangles, arcs, circles, ellipses, and polygons in continuously variable styles and positions.

3.2.4.33 The Presentation Graphics software shall provide the capability to resize, rescale, and flip objects vertically or horizontally.

3.2.4.34 The Presentation Graphics software shall permit alignment of objects and text vertically or horizontally.

3.2.4.35 The Presentation Graphics software shall provide the capability for batch printing of multiple slides and graphics files.

- 3.2.4.36 The Presentation Graphics software shall provide line styles options for thickness and arrowheads.
- 3.2.4.37 The Presentation Graphics software shall provide for cross-hatch patterns, foreground color, and background color.
- 3.2.4.38 The Presentation Graphics software shall provide at least seven different color fill options for both foreground and background.
- 3.2.4.39 The Presentation Graphics software shall provide text style options for bold, italic, underline, justification, special characters, and borders and grid options.
- 3.2.4.40 The Presentation Graphics software shall provide a pixel editor.
- 3.2.4.41 The Presentation Graphics software shall be able to group and ungroup selected objects into other temporary objects.
- 3.2.4.42 The Presentation Graphics software shall provide the capability to input digitized data.
- 3.2.4.43 The Presentation Graphics software shall provide the capability to select an object, select multiple objects and select all objects and deselect all objects.
- 3.2.4.44 The Presentation Graphics software shall provide the capability for the select function to cycle through objects.
- 3.2.4.45 The Presentation Graphics software shall provide the capability for adding or removing objects from currently selected groups.
- 3.2.4.46 The Presentation Graphics software shall provide the capability for selecting interior or exterior objects.
- 3.2.4.47 The Presentation Graphics software shall be able to change the displayed order of overlapping objects (front to back) by moving the object to the front or back or in either direction one object at a time.
- 3.2.4.48 The Presentation Graphics software shall provide the capability for the user to be able to zoom in and out repetitively.
- 3.2.4.49 The Presentation Graphics software shall allow the user to scroll through the zoomed graphic.
- 3.2.4.50 The Presentation Graphics software shall enable the user to rearrange objects through rotation(0 degrees through 360 degrees).
- 3.2.4.51 The Presentation Graphics software shall enable the user to set priority for background and foreground.

3.2.4.52 The Presentation Graphics software shall enable the user to rearrange objects through an alignment function (left, right, horizontal, vertical, top, bottom, and center).

3.2.4.53 The Presentation Graphics software shall be able to edit object and text size and color.

3.2.4.54 The Presentation Graphics software shall be able to fill objects with user-selectable patterns.

3.2.4.55 The Presentation Graphics software shall be able to modify line thickness, style, and weight.

3.2.4.56 The Presentation Graphics software shall be able to edit text, special characters, text point size and images.

3.2.4.57 The Presentation Graphics software shall provide a screen refresh capability.

### **3.2.5 Spreadsheet**

The following section contains functional requirements for spreadsheet office automation products in the DII COE.

3.2.5.1 The Spreadsheet software shall provide business graphics to include pie charts, line graphs, and vertical and horizontal bar graphs.

3.2.5.2 The Spreadsheet software shall provide at least 1000 rows and 256 columns.

3.2.5.3 The Spreadsheet software shall display the currently selected row and column position.

3.2.5.4 The Spreadsheet software shall be able to use relative and absolute references to other cells.

3.2.5.5 The Spreadsheet software shall be able to name a specified range of cells and to view, reference, erase, copy, and move the range by referring to the range name.

3.2.5.6 The Spreadsheet software shall be able to protect specific cells and groups of cells from global commands.

3.2.5.7 The Spreadsheet software shall be able to protect data from editing by cell, row, column, range of cells, as well as the whole spreadsheet with the ability to enable and disable edit protection.

3.2.5.8 The Spreadsheet software shall be able to adjust column width from the default value to the maximum width of the spreadsheet.

- 3.2.5.9 The Spreadsheet software shall permit display of text in excess of cell length when such display would not obscure other data.
- 3.2.5.10 The Spreadsheet software shall be able to select and display the current date in several user-selectable formats.
- 3.2.5.11 The Spreadsheet software shall support a macro programming language.
- 3.2.5.12 The Spreadsheet software shall be able to record a series of commands as a macro for subsequent editing and execution by a single command or function.
- 3.2.5.13 The Spreadsheet software shall allow a user to insert a pause in a macro command file for text entry while the macro is running.
- 3.2.5.14 The Spreadsheet software shall be able to retrieve a spreadsheet file and insert it into the one currently in use.
- 3.2.5.15 The Spreadsheet software shall be able to retrieve a spreadsheet file and overwrite the one currently in use.
- 3.2.5.16 The Spreadsheet software shall be able to save part or all of a spreadsheet as a separate file without altering the original file.
- 3.2.5.17 The Spreadsheet software shall permit the user to select an alternate default directory for spreadsheet file storage.
- 3.2.5.18 The Spreadsheet software shall permit the user to display a list of all spreadsheet files in a directory.
- 3.2.5.19 The Spreadsheet software shall be able to display and print a graph.
- 3.2.5.20 The Spreadsheet software shall be able to print the spreadsheet in portrait and landscape orientation in continuous or manual feed modes.
- 3.2.5.21 The Spreadsheet software shall provide variable typefaces and point sizes.
- 3.2.5.22 The Spreadsheet software shall provide user-selectable typeface enhancements to include bold, italics, and underline.
- 3.2.5.23 The Spreadsheet software shall permit user-defined page headers and footers.
- 3.2.5.24 The Spreadsheet software shall allow the user to set margins.
- 3.2.5.25 The Spreadsheet software shall permit the user to adjust the following output parameters: cell range, page range, line spacing, and color or black and white printing.

3.2.5.26 The Spreadsheet software shall permit the user to select from the following numeric data formats: currency, scientific, integer, negative, percent, dates, and text.

3.2.5.27 The Spreadsheet software shall permit the user to select the number of digits displayed after the decimal point.

3.2.5.28 The Spreadsheet software shall be able to scroll horizontally and vertically by line, page, and screen.

3.2.5.29 The Spreadsheet software shall be able to lock and unlock row and column headings while scrolling data.

3.2.5.30 The Spreadsheet software shall be able to modify, copy, and delete spreadsheet data and spreadsheet structure separately.

3.2.5.31 The Spreadsheet software shall perform mathematical operations on integer and real numbers to include addition, subtraction, multiplication, division, integer function (convert real number to an integer), absolute value calculations, rounding, and combinations of the above.

3.2.5.32 The Spreadsheet software shall perform string operations to include concatenation, sub-string, trim leading and trailing spaces, convert to upper and lower case, convert a string to a value, and convert a value to a string.

3.2.5.33 The Spreadsheet software shall perform mathematical operations to include logarithmic function, exponentiation, trigonometric functions, modulus, reciprocal, square root, summation, and random number selection.

3.2.5.34 The Spreadsheet software shall perform statistical operations to include linear regression, variance, standard deviation, mean, median, average, sum, minimum, maximum, and count.

3.2.5.35 The Spreadsheet software shall perform relational operations to include greater than, greater than or equal to, less than, less than or equal to, equal to, and not equal to.

3.2.5.36 The Spreadsheet software shall perform logical operations to include AND, OR, and NOT.

3.2.5.37 The Spreadsheet software shall perform combinations of arithmetic, relational, and logical operations.

3.2.5.38 The Spreadsheet software shall provide financial operations to include computing present and future values and depreciation, and calculating amortization tables, rates of return, and annuities.

3.2.5.39 The Spreadsheet software shall be able to specify how to recalculate the entire spreadsheet: manually or automatically.



3.2.5.40 The Spreadsheet software shall provide absolute and relative addressing when the user copies or moves data.

3.2.5.41 The Spreadsheet software shall be able to copy, move, and erase cells, rows, columns, and ranges of cells.

3.2.5.42 The Spreadsheet software shall permit user-defined justification for values and text to include left, right, or center justified.

3.2.5.43 The Spreadsheet software shall be able to reformat data by cell, row, column, range of cells, and the whole spreadsheet.

3.2.5.44 The Spreadsheet software shall be able to insert and delete rows and columns.

3.2.5.45 The Spreadsheet software shall be able to sort columns and multiple columns containing numbers and text in ascending and descending order using a primary key and a secondary key.

3.2.5.46 The Spreadsheet software shall be able to import and export data in the following file formats:

- (a) ASCII Text
- (b) Lotus WKS/WK1/WK3 spreadsheets
- (c) Microsoft Excel V5.0
- (d) Data Interchange Format (DIF)

3.2.5.47 The Spreadsheet software shall provide an undo function of at least one prior command.

3.2.5.48 The Spreadsheet software shall be capable of maintaining at least three linked spreadsheets in memory and at least five linked spreadsheets on disk.

3.2.5.49 The Spreadsheet software shall be able to create more than one report format for a given spreadsheet.

3.2.5.50 The Spreadsheet software shall be able to enable and disable page numbering for the spreadsheet.

3.2.5.51 The Spreadsheet software shall be able to calculate the number of occurrences of user-defined values or strings within a user-defined range.

3.2.5.52 The Spreadsheet software shall be able to store variable-length text strings in individual cells.

3.2.5.53 The Spreadsheet software shall provide basic database command features.

3.2.5.54 The Spreadsheet software shall provide basic report generation features.

3.2.5.55 The Spreadsheet software shall provide display and print formatting options to include line drawing, grid range selection, and cell borders.

### **3.2.6 Drawing and Illustration**

The following section contains functional requirements for drawing and illustration office automation products in The DII COE.

3.2.6.1 The Drawing/Illustration software shall create new graphics with initial controls for page size, bleed, and target printer resolution user-selectable with a range from 300 to 2540 dpi.

3.2.6.2 The Drawing/Illustration software shall provide the ability to set unit of measure preference in points, picas, inches, decimal inches, millimeters and centimeters.

3.2.6.3 The Drawing/Illustration software shall provide the capability to save as a template for subsequent use in creating graphics with similar color, layer, and attribute listings.

3.2.6.4 The Drawing/Illustration software shall provide the capability to import and export the following file formats:

- (a) Computer Graphics Metafile (CGM)
- (b) Tagged Image File Format (TIFF) R and G
- (c) Encapsulated PostScript (EPS)
- (d) Graphics Interchange Format (GIF)
- (e) Portable Bitmap (PBM)
- (f) PC Paintbrush (PCX)

3.2.6.5 The Drawing/Illustration software shall provide the capability to import the following file formats:

- (a) FrameMaker Interchange Format (MIF)
- (b) Microsoft Paint (MSP)
- (c) Lotus (PIC)
- (d) MacPaint (PNTG)
- (e) PowerPoint V3 and V4
- (f) WordPerfect Graphics (WPG)

- (g) Sun Raster
- (h) X-Window Dump (XWD)
- (i) X-Window bitmap (XBitmap)
- (j) Lotus WKS/WK1/WK3 spreadsheets
- (k) International Graphics Exchange Specification (IGES)

3.2.6.6 The Drawing/Illustration software shall support the use of the Joint Photographic Experts Group (JPEG) and CCITT Group 3 and 4 recommendations for compression of binary data files.

3.2.6.7 The Drawing/Illustration software shall provide mouse-driven tools to create lines.

3.2.6.8 The Drawing/Illustration software shall provide mouse-driven tools to create bezier curves, circles, squares, rounded corner squares, square and rounded corner rectangles, ellipses, and open and closed polygons containing up to 1000 editable nodes or points.

3.2.6.9 The Drawing/Illustration software shall provide user controls for editing color, stroke, fill, line weight, and x,y position.

3.2.6.10 The Drawing/Illustration software shall provide the ability to fill any graphic or textual element with solid color/tint, graduated fill, and pattern fill.

3.2.6.11 The Drawing/Illustration software shall provide the ability to group and ungroup any combination of textual or graphic elements.

3.2.6.12 The Drawing/Illustration software shall provide the capability to nest grouping of elements up to 25 levels (e.g., groups within a group).

3.2.6.13 The Drawing/Illustration software shall provide the ability to join and split elements.

3.2.6.14 The Drawing/Illustration software shall provide controls for vertical and horizontal alignment of any combination of graphic or textual elements with user selection of element edge to be aligned.

3.2.6.15 The Drawing/Illustration software shall provide controls for vertical and horizontal alignment of any combination of graphic or textual elements with user selection of element center to be aligned.

3.2.6.16 The Drawing/Illustration software shall provide controls for vertical and horizontal alignment of any combination of graphic or textual elements with user selection of element width and height to be aligned.

3.2.6.17 The Drawing/Illustration software shall provide controls for equal distribution of any combination of graphic or textual elements to be aligned.

3.2.6.18 The Drawing/Illustration software shall provide controls for equal distribution of any combination of graphic or textual elements with user selection of element center to be aligned.

3.2.6.19 The Drawing/Illustration software shall provide controls for equal distribution of any combination of graphic or textual elements with user selection of element width and height to be aligned.

3.2.6.20 The Drawing/Illustration software shall provide node or point editing capability to include conversion of nodes or groups of nodes to corner type nodes.

3.2.6.21 The Drawing/Illustration software shall provide node or point editing capability to include conversion of nodes or groups of nodes to curve type nodes and connector type nodes.

3.2.6.22 The Drawing/Illustration software shall provide the ability to automatically close or join non-touching or non-closed paths.

3.2.6.23 The Drawing/Illustration software shall provide the capability to fill and stroke graphic and text elements with user-defined tints and colors.

3.2.6.24 The Drawing/Illustration software shall provide the capability to fill graphic and text elements with user-defined patterns and line weights.

3.2.6.25 The Drawing/Illustration software shall provide a mouse-driven tool and key-combination to perform the following actions:

- (a) fill elements
- (b) select areas
- (c) draw elements
- (d) delete elements
- (e) replicate elements
- (f) blend elements
- (g) zoom
- (h) add textual elements

3.2.6.26 The Drawing/Illustration software shall provide for textual and graphic element mirroring both horizontally and vertically.

- 3.2.6.27 The Drawing/Illustration software shall provide for 360-degree rotation of textual and graphic elements at one-degree increments.
- 3.2.6.28 The Drawing/Illustration software shall provide the ability to add text with user controls for font, point size, leading, letter spacing, word spacing, kerning, horizontal scaling, justification (alignment), rotation, baseline shift, and color.
- 3.2.6.29 The Drawing/Illustration software shall provide the ability to convert text to paths and manipulate as any other path.
- 3.2.6.30 The Drawing/Illustration software shall provide the ability to align text to a path.
- 3.2.6.31 The Drawing/Illustration software shall provide the ability to define layers for an illustration.
- 3.2.6.32 The Drawing/Illustration software shall provide the ability for the user to place any graphic element on any defined layer with controls for positioning of said element to include front, back, and specific position within the specified layer.
- 3.2.6.33 The Drawing/Illustration software shall provide the ability for the user to place any text element on any defined layer with controls for positioning of said element to include front, back, and specific position within the specified layer.
- 3.2.6.34 The Drawing/Illustration software shall provide the ability to scale and skew elements or groups of elements.
- 3.2.6.35 The Drawing/Illustration software shall provide for user definition of colors to include process and PMS colors.
- 3.2.6.36 The Drawing/Illustration software shall provide a utility for locking grids or guides in place.
- 3.2.6.37 The Drawing/Illustration software shall provide for the toggling of snapping functions.
- 3.2.6.38 The Drawing/Illustration software shall provide the ability to toggle between preview of illustrations with full representation of fills, text, colors, and line enhancements or view display of path outlines and text only without fills, color or line enhancements.
- 3.2.6.39 The Drawing/Illustration software shall provide for the toggling of rulers, grids, and guides.
- 3.2.6.40 The Drawing/Illustration software shall provide for dynamic zooming capability allowing user to marquee select desired area for zoom with automatic resizing of the selected area to the display.

3.2.6.41 The Drawing/Illustration software shall, through a menu, allow the user to have the ability to zoom from 12.5 percent to 800 percent at user-definable increments and have the ability to "fit in window" the entire illustration.

3.2.6.42 The Drawing/Illustration software shall provide the capability to produce process color separation output in the primary printing components(Cyan Magenta Yellow K=black - CMYK).

3.2.6.43 The Drawing/Illustration software shall ensure that the output of Pantone Matching System colors must be user selectable.

3.2.6.44 The Drawing/Illustration software shall allow for output of one separation for each Pantone Matching System color or conversion of the PMS color to the CMYK equivalent.

3.2.6.45 The Drawing/Illustration software shall allow for composite printing of images in color, and black-and-white

3.2.6.46 The Drawing/Illustration software shall provide the ability to output graphics at full size with control strips, crop marks and registration marks.

3.2.6.47 The Drawing/Illustration software shall provide user selectable screen rulings for halftone output ranging from 50 lpi to 200 lpi.

3.2.6.48 The Drawing/Illustration software shall provide user selectable screen angles for halftone separation output up to 360-degrees at one-degree increments.

3.2.6.49 The Drawing/Illustration software shall provide trapping functions during output including chokes and spreads to be controlled both automatically and by user definition.

3.2.6.50 The Drawing/Illustration software shall provide output over print controls at both the element level and ink level.

3.2.6.51 The Drawing/Illustration software shall support Adobe PostScript Level 2 output to devices ranging from 300 dpi black and white and color printers to 2540 dpi laser image setters.

3.2.6.52 The Drawing/Illustration software shall provide editing capability to undo at least the most recently performed function.

3.2.6.53 The Drawing/Illustration software shall provide the ability to cut, copy, paste, and duplicate within a graphic and from one graphic to another.

3.2.6.54 The Drawing/Illustration software shall provide the ability to move graphic elements or groups of elements with a mouse using the drag and drop technique and by entry of x,y values in a dialog box.

3.2.6.55 The Drawing/Illustration software shall be capable of specifying point size of text for greeking during display.

3.2.6.56 The Drawing/Illustration software shall be capable of controlling high- and low-resolution display of imported images.

3.2.6.57 The Drawing/Illustration software shall be capable of toggling the display of curve and node handles used for manipulation of bezier curves.

3.2.6.58 The Drawing/Illustration software shall be capable of joining non-touching and broken paths.

3.2.6.59 The Drawing/Illustration software shall be able to set default graphic element attributes.

3.2.6.60 The Drawing/Illustration software shall be capable of setting color for guides and grids.

3.2.6.61 The Drawing/Illustration software shall be capable of selecting a user-defined distance for cursor key control.

3.2.6.62 The Drawing/Illustration software shall be capable of selecting a user-defined snap-to distance for all snap functions.

3.2.6.63 The Drawing/Illustration software shall provide for a multiple level undo and redo function.

### **3.2.7 On-Line Support Services**

On-Line Support Services provide the following types of services and functionality. On-Line Support provide the capability to access help from any screen or window within the user's operating environment. It is intended to provide comprehensive help to users in every aspect of the system implementation. On-Line Help provides a multitude of services including task specific instruction, search options, and on-screen demos. It is intended to give the user access to specific information. On-Line Help provides interactive links to the system help desk and to other remote sources of help. On-Line Job Planning provides descriptions of tasks involved, and required order of execution in correct job completion. This service provides help at a greater level of detail than On-Line Help. On-Line Reference gives the user access to all information contained in operator guides. This allows the user to browse for general information in a comprehensive electronic version of all system and operator manuals. Computer-Based Instruction provides informal tutorials to allow a deeper level of understanding of system operations.

3.2.7.1 The On-Line Support services shall provide the capability to allow users to establish focus on a certain object without activating that object. This will enable a user to gain functional or descriptive information about an icon or button without actuating its execution.

3.2.7.2 The On-Line Support services shall provide the capability for all primary and secondary task-related windows to display general descriptions and functional descriptions of an item on which the user establishes focus. This requirement will inform the user of the resulting software response if the object were invoked, and, in cases requiring user input in a certain field, what input is to be supplied and its format.

3.2.7.3 The On-Line Support services shall be capable of providing sufficient references to address anticipated user questions.

3.2.7.4 The On-Line Support services shall provide the capability to display a help window for all application windows. Each application window should provide users with access to information about the object with focus; methods available include context-sensitive help, an information bar in the window, or a Help Button that displays a separate help information dialog window.

3.2.7.5 The On-Line Support services shall provide the capability to access window-level help through pull-down menus.

3.2.7.6 The On-Line Support services shall provide the capability to access object-level help through a help key (e.g., F1).

3.2.7.7 The On-Line Help services shall be available for all potential modes of a window. For example, if the default mode of a window permits test editing, but also has a “print preview” mode, help for this window will cover capabilities/features available in both modes.

3.2.7.8 The On-Line Help instructions shall be printable.

3.2.7.9 The On-Line Help services shall be capable of keeping the help window displayed but inactive while the user executes the instructions provided in the window. This eliminates the need for the user to memorize the instructions while completing the inquired task.

3.2.7.10 The On-Line Help services shall be capable of providing the user with step-by-step instructions on how to perform a specific task relating to the user’s current job.

3.2.7.11 The On-Line Help services shall be capable of identifying all obscure intermediate steps essential to the process of completing a task. This will give the user the ability to perform tasks involving transitional steps which may not be obvious.

3.2.7.12 The On-Line Help services shall be capable of providing on-screen procedural demonstrations of task execution. This feature is intended to be a hands-off illustration of



how tasks are performed and must allow the user to repeat the demonstration at the user's discretion.

3.2.7.13 The On-Line Documentation services shall provide the user with the ability to search for information by subject or key words.

3.2.7.14 The On-Line Documentation services shall provide a cross-referencing capability between applications, including hypertext capabilities. This will allow the user to locate pertinent information that may not be presented in order.

3.2.7.15 The On-Line Documentation services shall provide a global index capability through which the user may perform topical searches by selecting entries given within the index. This allows the user another method of searching through hypertext techniques.

3.2.7.16 The Computer Based Instruction services shall provide step-by-step tutoring to users demonstrating specific task execution and processes for job implementation. This feature is a hands-on version of requirement OL 1.3, allowing users to actually perform the steps being demonstrated.

3.2.7.17 The Computer Based Instruction services shall be capable of providing tutorial lessons which will be presented to the user in an organized and progressive manner, beginning with basic operations and advancing through higher-level operations at a pace determined by the user.

3.2.7.18 The Computer Based Instruction services shall provide the capability to save training sessions which will allow users to continue the training process from previous sessions.

3.2.7.19 The Computer Based Instruction services shall be capable of providing the user with a performance evaluation using a rating system based on feedback from tutorial lessons.

3.2.7.20 The Computer Based Instruction services shall clearly indicate that the current mode is training and shall ensure that no changes are made to real-world data, states, or setting while in training mode.

3.2.7.21 The Computer Based Instruction services shall permit self-directed instruction and allow easy exit from any point of the instruction

3.2.7.22 The Computer Based Instruction services shall provide access to a training curriculum which includes lesson plans, practice exercises, and to the computer based instruction as well.

3.2.7.23 The On-Line Support services shall be capable of providing links to other help sources, e.g., help desk.

3.2.7.24 The On-line Support services shall provide hyperlinks to other sources of help such as the system help desk, Command Computer support home pages and the acquiring agency help desk.

### **3.3 EXTERNAL INTERFACE REQUIREMENTS**

Many other functional areas within the DII COE use office automation software as part of their overall package. For example, the message processing area incorporates a word processor for message composition and the executive manager incorporates a foldering system for file management. As the office automation functional area permeates the integration of other areas, it is important that each of the other functional areas review and update the requirements contained in the Office Automation SRS in order to ensure that the requirements meet their needs.

If DII intends to use common office automation modules throughout the COE, then these other functional areas will need to migrate their current products to the DII office automation suite once the requirements process has resulted in product selection. In addition, any future product upgrade and/or change will require coordination between these functional areas.

Office automation APIs will be published, at the appropriate time, in the DII Developer's Kit. DII COE functional areas which make use of those APIs will document their use in a runtime interface document to facilitate version upgrades or migration from one office automation package to another.

Other areas which have external interfaces include the desktop and the data interchange areas. Data interchange will provide the common interchange formats that the office automation software must incorporate. Data interchange requirements have been set forth in the functional requirements for each of the office automation components.

The office automation software area requires that the desktop area support the Common Desktop Environment (CDE) and the Application Programming Interfaces for Windows (APIW) interfaces. The CDE provides end users with a consistent graphical user interface across their workstations, and software developers with a single set of programming interfaces to desktop integration. CDE also enables users to transparently access data and applications for anywhere on the network. APIW specifies the existing practice for application programming interfaces used by a significant majority of programs: the Microsoft Windows APIs. Work on the specification (currently in draft) is occurring via a Technical Committee which has plans to publish a specification in early 1996.

The Office Automation functional area also requires that the X/Open Single UNIX Specification (SUS) be supported and available to the office automation software within this functional area. The X/Open SUS focuses on application portability and will supersede the currently X/Open Portability Guide 4 (XPG4) .

### **3.4 INTERNAL INTERFACE REQUIREMENTS**

The DII Office Automation software packages shall be able to exchange data using cut-and-paste between the applications as well as be able to interchange data via data interchange formats as specified within each package. The requirements for internal data elements within the individual office automation packages are contained in the requirements for each package.

### **3.5 INTERNAL DATA REQUIREMENTS**

There are no internal data requirements.

### **3.6 ADAPTATION REQUIREMENTS**

There are no adaptation requirements.

### **3.7 SAFETY REQUIREMENTS**

There are no unique safety requirements.

### **3.8 SECURITY AND PRIVACY REQUIREMENTS**

The current trend in DII is to build systems in compliance with a common infrastructure made up of interoperable and reconfigurable components. To ensure that components plug-and-play, the infrastructure and target system architectures are standards-based. To reduce life-cycle costs, DII will incorporate commercial off-the-shelf (COTS) components and open systems standards.

From a security standpoint, there are a number of issues given a COTS-based approach. First, the pedigree of COTS products is unknown and thus the assurance and functional capability of the documented (and undocumented) security features and mechanisms are suspect. Without detailed design information, the approach to security risk management, certification, and accreditation of COTS products focuses on testing to see if one can defeat a product's security mechanisms rather than on design analysis. Common product and standards knowledge and misconfigurations make COTS products more vulnerable to hackers. This threat increases the need to strictly configure and manage systems, since reconfiguration can provide further opportunities for attack. The effectiveness of information security depends on careful configuration of components, continuous security monitoring, and user training.

Security functionality provided by an information system must be complemented by security controls from other disciplines, including physical, administrative, and procedural security. In particular, the operational effectiveness of information security functionality depends on how well it is administered and used, and hence, on operational procedures and user security training. Furthermore, the use of a common infrastructure will result in a greater exposure to

attacks and will increase the importance of strictly configuring and managing the infrastructure since reconfiguration could provide new opportunities for attack.

The DII Office Automation software shall be capable of being configured, operated and maintained in accordance with the DII Management Services functional area requirements. These requirements include accountability, availability, confidentiality and integrity. For further definition of these requirements and how they apply to the COTS products selected for the office automation functional area, refer to DII Security Requirements Document.

### **3.9 ENVIRONMENT REQUIREMENTS**

There are no environment requirements.

### **3.10 COMPUTER RESOURCE REQUIREMENTS**

There are no computer resource requirements.

### **3.11 SOFTWARE QUALITY FACTORS**

Office Automation capabilities shall be portable and reusable.

### **3.12 DESIGN AND IMPLEMENTATION CONSTRAINTS**

Versions of the Office Automation functional area modules shall operate on the required DII hardware platforms running the specified operating systems. Currently, DII supports the following platforms and operating systems:

- (1) Hewlett-Packard (HP) 900/700 Series workstations running HP-UX v9.01 and HP-UX v10.0
- (2) Sun Microsystems (Sun) SPARC workstations running Solaris v2.4 and v2.5
- (3) Intel workstations running Windows NT and Windows 95 (supported as clients only).

Therefore, office automation products which are selected for use in the DII COE must be available for these platforms.

### **3.13 PERSONNEL-RELATED REQUIREMENTS**

There are no personnel-related requirements for Office Automation. Personnel-related requirements shall be based on the system into which this Office Automation capabilities are integrated.

### **3.14 TRAINING-RELATED REQUIREMENTS**

There are no training-related requirements for Office Automation. Training-related requirements shall be based on the system into which this Office Automation capabilities are integrated.

### **3.15 LOGISTICS RELATED REQUIREMENTS**

All software shall be made available and distributed in accordance with the DII COE Integration and Runtime Environment Specification, V2.0.

### **3.16 OTHER REQUIREMENTS**

#### **3.16.1 Interoperability Requirements**

Interoperability is the ability to move data and information across networks. One of the reasons for migrating to a reduced number of systems is to improve interoperability between systems. With many different systems performing similar functions, it is an extremely difficult task to ensure that all the system deployed will be able to inter operate. By reducing the variety of systems proliferated, the problem of interoperability between systems is also reduced to a more manageable challenge.

In addition to integrating the office automation capabilities it is also important that the data produced by the office automation modules can be imported and exported in a suitable format. The requirements for the import and export of data within the individual office automation packages are contained within the functional requirements for each package.

The DII Office Automation software suite shall inter-operate such that each of the packages can exchange data and information across the network. In addition, the DII Office Automation software shall inter-operate, as needed, with all other DII functional areas.

### **3.17 PACKAGING REQUIREMENTS**

All software shall be delivered in accordance with the DII COE Integration - Runtime Environment Specification, V2.0 (Draft) .

### **3.18 PRECEDENCE AND CRITICALITY OF REQUIREMENTS**

All requirements have equal value.

## **SECTION 4**

### **QUALIFICATION PROVISIONS**

Each of the COTS office automation software applications must be tested with each DII hardware platform and with each DII operating system version. Any of the following methods: The operation of the CSCI, or part of the CSCI, using instrumentation or other special test may be used to ensure that each requirement identified in Section 3 has been met:

- (1) Demonstration: The operation of the CSCI, or part of the CSCI, that relies on observable functional operation not requiring the use of instrumentation, special test equipment, or subsequent analysis
- (2) Test: The operation of the CSCI, or part of the CSCI, using instrumentation or other special test equipment to collect data for later analysis.
- (3) Analysis: The processing of accumulated data obtained from other qualification methods. Examples are reduction, interpretation, or extrapolation of test results.
- (4) Inspection: The visual examination of CSCI code, documentation, etc.
- (5) Special Qualification Methods: Any special qualification methods for the CSCI, such as special tools, techniques, procedures, facilities, and acceptance limits.

## **SECTION 5**

### **REQUIREMENTS TRACEABILITY**

There are no explicit requirements for office automation set forth in the DII COE Requirements document dated 15 August, 1994 (Draft).

## **SECTION 6**

### **NOTES**

There are no notes.